UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/C.7/1996/6
1 May 1996

ORIGINAL: ENGLISH

COMMITTEE ON NATURAL RESOURCES
Third session
6-17 May 1996
Item 6 of the provisional agenda*

FUTURE WATER RESOURCES MANAGEMENT ISSUES AND THE STRATEGIES AND POLICIES THAT THE INTERNATIONAL COMMUNITY SHOULD BE CONSIDERING IN RESPONSE

Inter-sessional strategy paper of the Committee on Natural Resources on future water resources management issues and appropriate strategies and policies

CONTENTS

	Paragraphs	Page
INTRODUCTION	1 - 5	3
I. WHY IS THE MANAGEMENT OF WATER RESOURCES A CRUCIAL ISSUE?	6 - 20	4
A. Imminent massive water crisis	6 - 8	4
B. Need for high-level political involvement	9 - 12	4
C. Four main components of the water crisis	13 - 18	5
D. Impact of water crisis on key societal sectors	19 - 20	8
II. WHERE DO WE START?	21 - 36	10
A. Multi-cause syndrome of environmental change	21 - 22	10
B. Non-negotiable constraints	23 - 31	10

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CONTENTS (continued)

		Paragraphs	Page
	C. Negotiable issues	32	15
	D. Particular regional problems	33 - 36	15
III.	WHAT IS TO BE DONE?	37 - 55	17
	A. Water management revolution	38 - 43	17
	B. Strategies for sustainable land/water management	44 - 54	19
	C. Human capability development	55	21
IV.	HOW IS IT TO BE DONE?	56 - 67	21
	A. Defining constraints	58	21
	B. Management tools	59 - 61	22
	C. River basin oriented action plan	62 - 64	22
	D. Financing modes and economic incentives	65 - 67	23
V.	WHO SHOULD DO IT?	68 - 81	24
	A. Governments	69 - 71	24
	B. United Nations	72 - 81	25

Tables

1.	Fourfold water crisis: threats and risks	7
2.	Sectoral breakdown of the water crisis	9

Figures

I.	Where are we heading?	6
II.	Non-negotiable preconditions influencing international dependency among countries sharing a river basin	12
III.	Water availability as seen on a regional scale	14

INTRODUCTION

1. The present inter-sessional strategy paper was prepared by the members of the Committee on Natural Resources under the leadership of Ms. Malin Falkenmark, in accordance with a decision made by the Committee at its second session.

2. The world community is currently struggling with the widespread symptoms of the mismanagement of land and water by previous generations. An array of international programmes are addressing water-related issues one by one. At the same time, rising expectations and unavoidable population growth - both major societal driving forces - are leading the world towards a severe water crisis. By 2025, more than one third of the world population will be living in countries that are water stressed or have chronic water scarcity. Constraints to social and economical development strategies will appear and will have to be reckoned with in national planning, possibly imposing unforeseen and unwanted limitations on economic development, self-reliance in food, health, industrial development etc.

3. The imminent crisis propels the water issue onto the international political agenda alongside global climate change, which has already attracted massive national and international interest although it is in fact a more distant prospect: the water crisis is an even higher priority due to its shorter time horizon. Urgent action of a new type is needed to ensure that water's deep involvement in both environment and development issues can be properly addressed, action that will demand an integrated approach to land use, water-supply and waste management, with due attention to all water's parallel functions in nature and society, as well as to the evident linkages between upstream land and water use and downstream opportunities. The most evident unit for such integration is the catchment or river basin.

4. Governments' participation will be crucial to make the management revolution possible. Their particular responsibilities to society include:

(a) To make such management possible by providing adequate legal rules, capable administration, integrated regional planning and encouragement of local action;

(b) Securing the human capability development that will be necessary for its implementation;

(c) Agreeing on ethical rules and the general approach to hydrographic interdependencies. Since the problem is generic in character, it is shared by all countries. What varies is the composition of the problem clusters, according to differences in hydroclimate, soil vulnerability, and the level of socio-economic development and multilateral dependence.

5. International cooperation is essential to identify a diagnosis for the overall problem: what is at stake, the international actions needed and the water ethics that could provide guidance. Since global food security is closely linked to water availability, such issues should be properly linked. The following strategic policy responses are urgently needed:

(a) Acknowledging non-negotiable constraints, linkages and interdependencies;

(b) Developing ethical rules for international guidance;

(c) Conflict mitigation measures;

(d) Preparedness for environmental migration;

(e) Addressing short-term and long-term issues in parallel;

(f) Making it possible to take an integrated approach to land and water management within existing hydrographic boundaries.

I. WHY IS THE MANAGEMENT OF WATER RESOURCES A CRUCIAL ISSUE?

A. Imminent massive water crisis

6. Among the international programmes that are currently addressing water-related issues, the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa, focuses on soil problems in dry regions where water is scarce; the debate on land-based sources of marine pollution draws attention to water's role as a mobile carrier of pollutants from land to rivers and coastal waters; the debate on world food security draws attention to the key role of water in food production; and since the United Nations Water Conference (Mar del Plata, 14-25 March 1977), huge efforts have gone into safe water-supply and sanitation, although unfortunately the net effect of the Conference has been partly offset by population growth.

7. The world is facing a severe water crisis: by 2025, 52 countries with a total population of more than 3 billion people will be plagued by water stress or chronic water scarcity. 1/

8. Politicians are caught between the legacy from past mismanagement of natural resources on the one hand, and future obligations to a rapidly growing world population on the other. If not averted in time, such a water crisis will have severe repercussions on human health, global food supply and nutrition, the eradication of poverty, human dignity and quality of life, and environmental security and peace, to say nothing of ecosystem health and biodiversity.

B. Need for high-level political involvement

9. A new kind of action will be called for. To approach the crisis as merely a technical water management issue, in the conventional fragmented way would actually aggravate the situation; regional political involvement at the highest level of government will be needed to articulate a national water resources strategy that is fully integrated into national planning.

10. The water crisis is an even higher priority than global climate change due to its shorter time horizon: the mothers are already born and population growth effectively unavoidable. It is a question of how much politicians need to know before they act with equal decisiveness on the imminent crisis in world water resources.

11. One international document after the other has expressed more or less direct and explicit warnings of the impending crisis at the United Nations Water Conference in 1977, the International Conference on Water and the Environment and the United Nations Conference on Environment and Development in 1992, and the first session of the Committee on Natural Resources and the Stockholm Water Symposium in 1993. Unfortunately, high-profile international commissions have largely ignored the issue; the Brundtland report, Our Common Future, 2/ is a notable example.

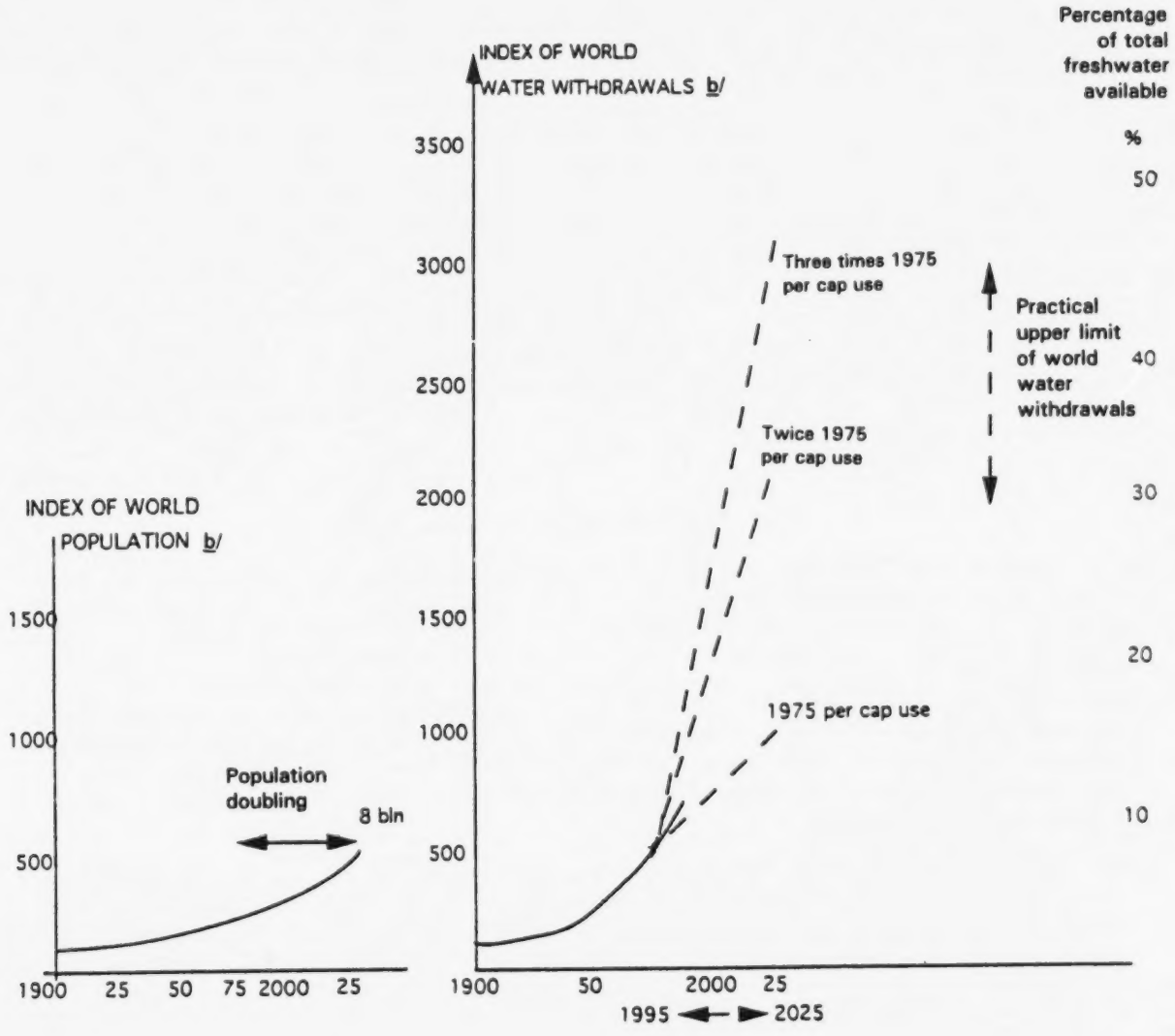
12. The present inter-sessional strategy paper attempts to define the crisis, its implications, and the basic strategies needed to avoid the risk for societal retardation that it involves.

C. Four main components of the water crisis

13. During the twentieth century, the supply of water to various sectors of society has increased about two and a half times faster than the population growth. A continuation of that trend will not be realistic (see fig. I). The amount of water available is finite and the most accessible sites for the construction of dams and reservoirs have already been appropriated. In addition, the costs of building additional storage facilities and conveyance systems are soaring, and attempts to recover costs have so far met with little progress; financial constraints are contributing to a revision of previous policies; and many contemporary projects are being questioned by vocal environmental movements.

14. The issues that will dominate water management in the twenty-first century are increasing population pressure on a finite water resource; impacts on that resource generated by climate change; intersectoral disputes; environmental migration; and international controversies and wars. The implications of a full-fledged water crisis are much more severe than most politicians seem willing to acknowledge (see table 1).

Figure I. Where are we heading? a/



Source: I. A. Shiklomanov, "World freshwater resources", in Water in Crisis, P. Gleick, ed. (Oxford University Press, 1993).

a/ Tendencies 1900-2025 of population growth (left) and gross world water withdrawals (right), as compared to practical upper limit of water withdrawals: three projections for the period 1975-2025, during which world population will approximately double: unchanged, doubled and trebled 1975 per capita use.

b/ Time stable flow; 1900 values given as index 100.

Table 1. Fourfold water crisis: threats and risks

Problem	Cause	Threat	At stake
Water quantity crisis	Finite resource Escalating demands	Increasing disputes and conflicts	Development Peace Food security
Water quality crisis	Expanding water pollution	Increasing morbidity/ mortality	Human health Aquatic ecosystems
Urban scale/ water supply crisis	Urban growth out of control	Social unrest Persisting poverty	Social order Overall development
Land fertility degradation crisis	Degradation of soil permeability/water holding capacity Erosion	Decreasing crop yields/agricultural production	Food security

1. The water quantity crisis

15. The water quantity crisis has several faces. Many poverty-stricken low latitude countries with rapid population growth, high illiteracy and large deficiencies in terms of trained manpower suffer from a complex water scarcity, in the form of particularly problematic environmental conditions with which they must cope, such as monsoon climates, erratic rainfall and poor soils. The number of individuals living in water-stressed countries or countries with a chronic water scarcity will increase tenfold in only one generation to encompass more than one third of the world population. 3/ In waste areas, there has been an overexploitation of aquifers, which are becoming ever more seriously depleted. 4/ The risks that threaten to erupt wherever socio-economic development depends on a continuously undermined key resource are evident: ultimate resource constraints will one day send shocks through such vulnerable societies.

2. The water quality crisis

16. The water quality crisis is the result of the poor handling of the waste that attends human activities. Except for certain pollutants for which waste water treatment has been successful in more advanced regions, water pollution continues to increase. 5/ All water soluble pollutants are spread with the water cycle and the sea currents. Indeed, there is no more pristine water left: human pollutants are found even in Antarctic waters.

3. The urban scale and water-supply crisis

17. The urban scale and water-supply crisis is linked to the fact that urban growth is more or less out of control in many third world regions. The growth is exacerbated by the rural push - the exodus of poor population strata from marginal areas where it is not considered possible to make a dignified living. Municipal authorities face increasing difficulties in supplying the infrastructure needed to provide safe water and sanitation. As an illustration, Beijing's future as a capital of China has actually been questioned. Many systems carry water only a few days a week. There are exaggerated expectations for the Government to supply household water. Water-supply systems are often in bad shape, seriously cracked with large-scale leakages, so that they can easily be contaminated by pollutants from equally cracked sewage pipes. Moreover, the possibility of bringing more water to the city is often limited by landscape hydrology and the escalating costs involved in long-distance water transfers.

4. The land fertility degradation crisis

18. The land fertility degradation crisis has many water-related causes, such as soil erosion, salinization and waterlogging from poorly managed irrigation, and acidification. 6/ Current expectations in terms of increase of crop production may prove unrealistic: economists sometimes overlook biophysical constraints, and many analysts tend to neglect changes in the resource base. Although the Food and Agriculture Organization of the United Nations (FAO) expects crop production in sub-Saharan Africa to be 3 per cent per year during the period 1990-2010, other estimates suggest that due to ongoing land degradation, a more probable growth rate is 0.5 per cent per year. 7/ Such a shortfall could result in massive starvation.

D. Impact of water crisis on key societal sectors

19. Water affects human activities in many parallel ways:

(a) As a life necessity in the form of the daily need for household water. The threat lies in collapsing water-supply systems in cities and escalating pollution in existing systems;

(b) As a habitat for fish and seafood, an important base for food and protein supply. The threat lies in such a foodstuff acting as a disease vector;

(c) As a key resource in agriculture. In rain-fed agriculture, the threat lies in land degradation, involving the formation of impermeable crusts; in irrigated agriculture, the threat lies in the degradation of water by upstream activities, as well as in waterlogging and salinization destroying land productivity due to the poor operation and maintenance of irrigation systems;

(d) As a key resource in socio-economic production, especially water for industrial processes, since pollution of accessible water may impoverish vulnerable industry and a lack of usable cooling water may destroy sensitive computer equipment etc.;

(e) As a key resource for hydropower-based energy supply. The threat lies in the fact that the river flow may be reduced by upstream land-use activities that consume water and return it to the atmosphere so that it is not available for reuse.

With all the four crises described above characterizing the present situation, human society is indeed threatened in several ways in parallel: the drinking-water supply and health of future generations, the food security of the world population, the health of aquatic ecosystems, biodiversity, societal production and thus the potential for both the eradication of poverty and economic development are all threatened (see table 2).

Table 2. Sectoral breakdown of the water crisis

Sector hurt	Water function involved	Cause	Risk
Drinking water-supply	Health	Water pipe degradation	Increasing morbidity and mortality
		Water pollution continues to expand	
		Agricultural chemicals	
Food production	Production factor	Availability constraints	Famines
		Expansion of consumptive use	Environmental migration
Aquatic ecosystems/ biodiversity	Habitat	Expanding water pollution	Biodiversity degradation
Retardation in societal production	Production factor	Finite availability	Societal retardation in dry climate regions
		Growing demands	
		Increasing sector competition	

20. The current food supply and environmental crisis is probably the most serious crisis ever faced by humanity, and its origin is the water crisis. The threat to regional food self-reliance and overall food security is particularly serious because it seems to be poorly acknowledged. What is needed in South Asia and sub-Saharan Africa - two subregions suffering from both complex water scarcity and large-scale land degradation - is nothing less than a production revolution, larger even than the first green revolution, a super green revolution. 8/ In some regions, industrial development may be delayed due to problems of water-supply, escalating pollution and groundwater overexploitation. In others, competing claims for additional water may be incompatible, such as

when upstream use expands at the expense of downstream use, or when urban supplies will be favoured at the expense of rural provisions.

II. WHERE DO WE START?

A. Multi-cause syndrome of environmental change

21. To safeguard the future of their societies, Governments are facing formidable challenges. The current situation has grown out of a number of parallel causes:

(a) Pollutants have been introduced into water pathways, degrading water quality;

(b) Land-use related manipulations of water flow determinants have caused changes in flow regimes (river flow, floods, dry season flows);

(c) Manipulations with soil and vegetation in regions with vulnerable soils have caused land impermeability and therefore lack of soil moisture (so-called desertification);

(d) Poor management of irrigation systems has caused waterlogging and salinization of fertile soils.

While administration has been fragmented on all levels, with different water issues being addressed by different authorities, there has often been a lack of a comprehensive overview to compensate for such fragmentation.

22. Two fundamental questions that must be addressed are:

(a) What in man's relations to this vital resource is non-negotiable and must unavoidably be adapted to?

(b) What is negotiable and can be altered? Governments will be helped by understanding the differences, acknowledging non-negotiable constraints in working out new management models based on what is indeed negotiable. 9/

B. Non-negotiable constraints

23. A number of water-related phenomena are non-negotiable in the sense that they result from laws of nature guiding the circulation of freshwater around the globe. Since prehistoric times, such phenomena have been mitigated and compensated for by technological and management measures.

1. Hydroclimatic realities

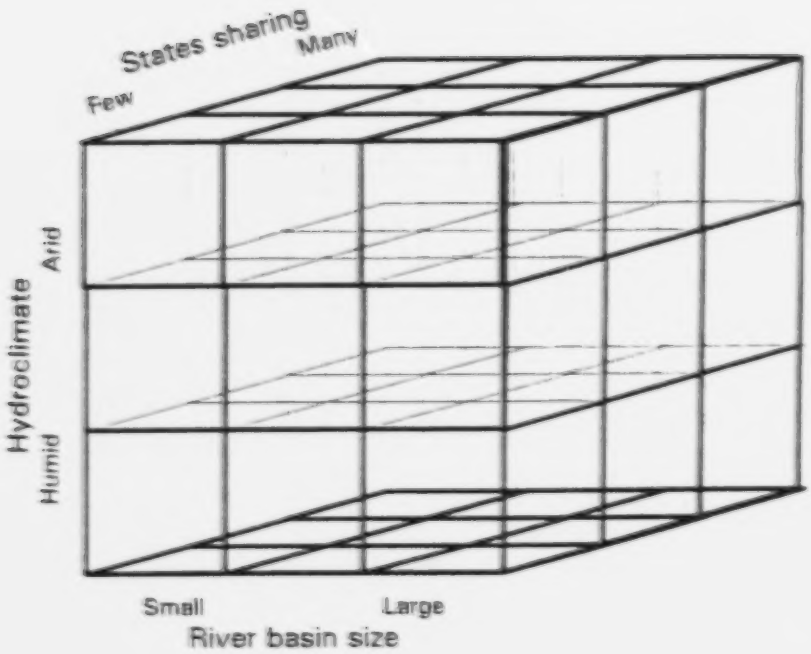
24. The hydroclimate is governed by the atmospheric circulation, and is subject to large regional differences in terms of precipitation (amount, seasonality, predictability, inter-annual variability etc.); evaporative demand, which

regulates the amount returning back to the atmosphere as evaporation and plant transpiration; and the remaining water surplus recharging aquifers and rivers.

2. Hydrographic realities

25. The hydrographic pattern marks the delineation of river basins, whereas the political boundaries define the number of countries that have to share its water (see fig. II). Dependency on international cooperation varies considerably between the extremes represented by a small river basin in a dry climate region shared by many different countries, on the one hand, and a large river basin in a humid region enclosed in one single country, on the other.

Figure II. Non-negotiable preconditions influencing international dependency among countries sharing a river basin



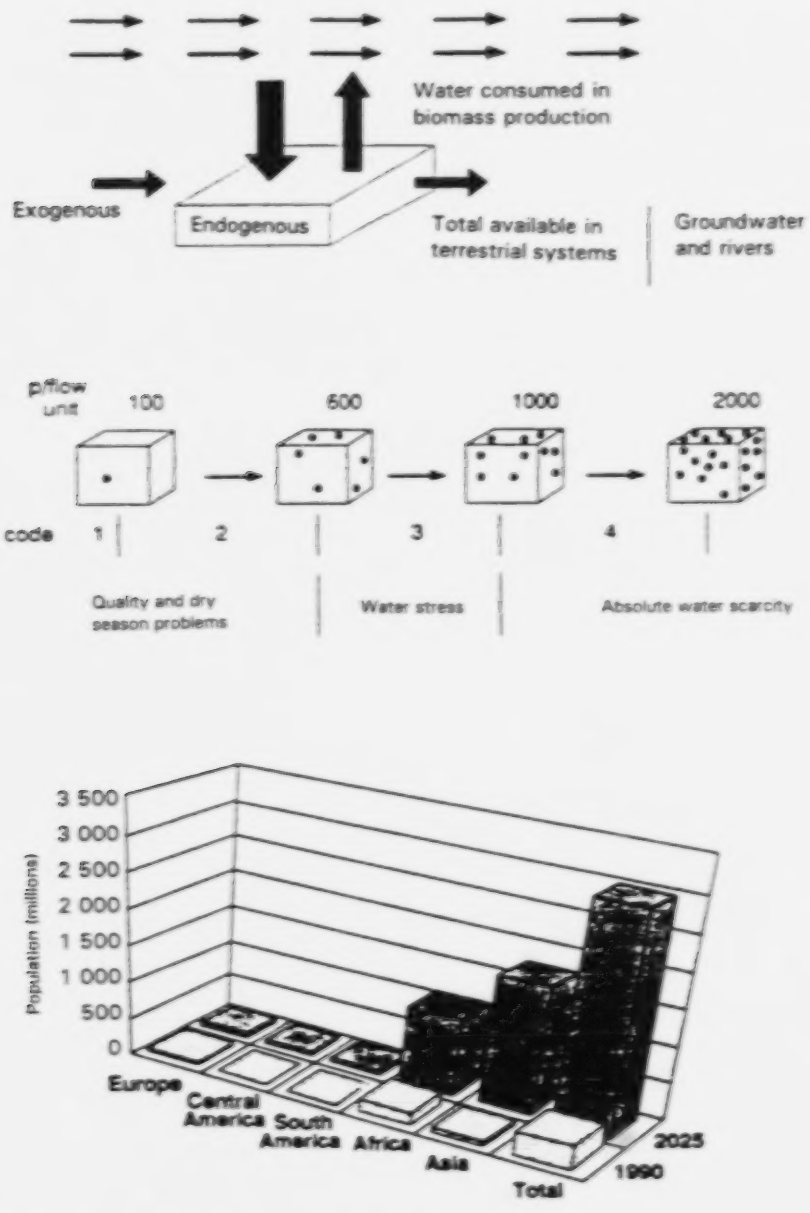
3. Constraints in water availability

26. The water availability of a country varies with its climatic position, geology and hydrography. The hydroclimate determines the run-off produced from rainfall within the territory, and the hydrography determines the inflow of run-off produced from upstream rainfall in the same river basin.

27. The amount of water available in rivers and aquifers can basically be seen as a certain number of flow units of water (for example, 1 million cubic metres per year). It varies between wet and dry years, but in a stable climate the long-term average is constant and finite. The size of the population defines the population pressure on that amount (i.e., the average number of citizens that jointly depend on each flow unit of water; see fig. III). Whether a high population pressure gives rise to manifested water stress or not depends on the actual level of living and water requirements.

28. All the water available may not be accessible, however, due to seasonality and inter-annual fluctuations. Natural availability characteristics can be modified by reservoirs, pipelines, canals etc. Constraints in the accessibility and utility of safe freshwater are aggravated wherever the resource is affected by water consumption in upstream countries, increasing pollution of entire water systems, depletion and pollution of aquifers, and deforestation and urban development.

Figure III. Water availability as seen on a regional scale a/



Source: M. Arnestrand, Royal Institute of Technology, Sweden.

a/ Upper figure illustrates water availability, as composed of an endogenous component emerging from rainfall over the country and an exogenous component emerging from rainfall over upstream countries; middle figure visualizes growing population pressure on a finite availability, each cube representing one flow unit of 1 million cubic metres per year, each dot 100 persons jointly depending on that water; lower figure indicates number of people living in water stressed countries by 1990 and 2025 (more than 600 per flow unit of available water) with columns showing different continents and the gross total.

4. Two-way land/water linkages

29. Given water's many parallel functions, most land-use activities are water-dependent. The demand for water is rising rapidly for agriculture, energy generation, industrial production and urban consumption. Due to water's two carrying functions (carrier of both solutes and silt), most land use also affects water.

30. For the first reason, water conditions provide constraints to water-dependent land use. Rice can only be grown where there is plenty of water. For crop yields to be optimal, there must be enough water to satisfy the requirements of the crop. A city can continue to function only as long as water is being supplied to the water-dependent urban functions (households, schools, hospitals and industries). For example, the city of Bulawayo in Zimbabwe was close to evacuation during the 1992 drought.

31. For the second reason, land use and the manipulations of soil and vegetation that it involves influence the essential determinants of water flows and pathways through a landscape, both above and below the ground. Land use also involves the handling of waste, resulting in an output of chemicals to the ambient atmosphere and polluting the water circulating through the landscape in the water cycle. In fact, most pollution of coastal waters originates from land-based sources.

C. Negotiable issues

32. In contrast to the non-negotiable phenomena that govern the general behaviour of water in the landscape, man's relation to that resource is more or less negotiable. Human ingenuity has developed considerable degrees of efforts to make the best within given non-negotiable constraints. Four key components influence societies' interaction with existing water constraints:

(a) Expectations and lifestyles determining water requirements;

(b) Technological arrangements to mitigate variability in time and space;

(c) Administrative arrangements to regulate human interactions with water;

(d) Societal capability/skills to manage land use and water resources.

D. Particular regional problems

33. Water-related preconditions and problems are subject to considerable regional variations in terms of environmental preconditions for human activities, as follows:

(a) Some regions have marked seasonal differences in rainfall, while others have year-round precipitation;

(b) Some regions have highly permeable soils that allow the rain to infiltrate and form groundwater, while others are almost impermeable, so that the rain forms rapid floods;

(c) Some areas are located high up in the landscape where the vegetation is rain-fed, while others are low-lying and the vegetation is fed by capillary rise of groundwater and by inundated water;

(d) Some areas have a high evaporative demand and a run-off highly vulnerable to vegetation changes, while others have low evaporative demand and the hydrological effects of vegetation changes are barely detectable.

34. Superimposed on such naturally existing differences are cultural differences based on societal aspirations, lifestyles, population pressure, urbanization etc. that vary from region to region.

35. Man-made environmental problems are also subject to a considerable number of regional variations, as follows:

(a) Dry topics: land degradation, waterlogging and salinization of irrigated croplands, and bacterial pollution from human waste;

(b) Dry temperate regions: waterlogging and salinization, chemical pollution from industrial waste and eutrophication from overfertilization in agriculture;

(c) Humid tropics: degradation of deforested lands, chemical pollution from mining and other industry, and bacterial pollution from untreated sewage;

(d) Humid temperate regions: forest dieback from acid rain, chemical bombs and the pollution legacy of previous generations, eutrophication from overfertilization and chemical pollution from industrial waste.

36. A recent overview 10/ summarizes the current predicament as follows:

(a) Information on the resource is vastly inadequate; there is no reliable assessment of the human impact on the resource;

(b) In cooler regions, new water resources development measures are met with broad public scepticism, while arid regions are fundamentally dependent on such measures;

(c) In arid regions, climatic conditions involve large vulnerability to human impacts on soil and vegetation;

(d) Degradation of water quality threatens to become an almost unmanageable crisis, especially in the developing regions, where both chemical and microbiological pollutants create problems. The developed regions have largely failed in their source reduction efforts, except for a few pollutants;

(e) Agriculture is confronted with regional water scarcity, which constrains current goals of achieving food self-reliance and socio-economic development. A more fundamental adaptation to water constraints is called for;

(f) In the energy sector, water is required for almost every aspect of energy production and use. In dry climate regions, energy choices will therefore be influenced by the limitations of water availability.

III. WHAT IS TO BE DONE?

37. The simplistic water resources management models of the past, which have led into the current dangerous dilemma, will have to be modified. The sector-wise approach to water, ignorance of natural resource issues in governance circles, and a fragmented administration attempting to link activities that are interdependent but not provided for by legislation face huge bureaucratic difficulties. What is needed is no less than a water management revolution. The role and place of water in the socio-economic system varies from country to country: therefore, there is no standard solution. Efforts to avert the critical situation must focus on two parallel goals: improving everyday life and living conditions for poverty-stricken and famine-prone populations, and long-term planning for an environmentally sustainable future. A proper balance has to be struck between curative and preventive action: finding a remedy for the symptoms of past mismanagement while at the same time avoiding future calamities linked to societal driving forces.

A. Water management revolution

38. In broad terms, in international negotiations decision makers and diplomats should:

(a) Develop an overall insight into the role of water in the development strategy of the country, and propose and defend on the political level a strategy for the sustainable use of the nation's land and water resources;

(b) Enable, wherever water is scarce, a philosophy of maximum productivity per unit of water;

(c) Enable the formulation of an integrated water management plan that establishes a course of action involving natural and human resources in a given watershed, including social, political, economic and institutional considerations. Natural and human resources should be identified, development options evolved and impacts assessed in such a way that political decisions can be made. Typically, such a process should include (i) assessing the hydroclimatic, hydrographic and demographic conditions; (ii) establishing water management objectives; (iii) formulating and evaluating alternative resource management actions, implementation tools and institutional arrangements; (iv) assessing the impacts of promising alternatives; and (v) choosing and implementing the preferred course of action.

39. The patterns of water needs and demands will have to change considerably in many countries. It is useful to distinguish between (a) supply management, seeking a supply adequate for a set of water needs and including the traditional activities required to locate, develop, and exploit existing and new sources of water, and (b) demand management, concerned with the ways in which water is allocated and used, the socio-economic and environmental effects of that use, and the various tools available to promote more desirable levels and patterns of use.

40. Projections about growing demands and needs for water raise the question of technological options. It is often argued that contemporary technology enables us to transfer water from surplus to deficit areas, and also to reuse and recycle water almost indefinitely. A point will sometimes be reached at which it will make more sense to import the required food (virtual water) instead of importing the (real) water needed to drought-proof a given crop production. As to supply management, the availability of cheap and environmentally acceptable energy may help resolve supply problems through water transfer, groundwater pumping and desalination. 11/ The high costs of desalination, however, confine that option to uses of water with a high economic value, although with time improvements may extend its possible range.

41. Water purification techniques also have a role to play, since they facilitate water recycling and reuse. Systems, practices and products that reduce water contamination are required not only to protect the environment but also to increase water-supply options. There is also the option of having several water distribution systems with different levels of quality and different prices so as to reserve high-quality water for uses that require it.

42. Demand management can be described as a coherent set of actions and tools that can be used to implement the levels and patterns of water use required for meeting desired objectives. Technical tools are mostly applied to directly affecting the way in which water is used, through direct regulation or through changes in technology, operation or voluntary behaviour. Reduction in water losses in transport and distribution is an important part of any demand management plan. Demand-side management schemes include the diffusion and promotion of devices and systems that use water more efficiently, including water-saving innovative industrial processes. A wide range of low water use devices and technology is available, numbering in the hundreds of individual techniques, fixtures and devices. The application of a variety of demand-side management schemes for energy adopted by electric utilities in several countries could be studied, especially for the domestic and service sectors, drawing from the very substantial experience accumulated in that field.

43. With irrigated agriculture claiming two thirds of all the water removed from rivers, lakes and aquifers, making irrigation more efficient is a top priority in moving towards more sustainable water use. A wide variety of measures exists to improve agriculture's water productivity, such as new and improved irrigation technologies, and better management and cropping pattern practices by farmers and water officials, backed up by changes in the institutions that govern the distribution and the use of irrigation water. Field experimentation on innovative irrigation schemes is required to qualify such schemes for the actual conditions of application in different countries.

B. Strategies for sustainable land/water management

44. Sustainable management basically aims at successfully and sustainably coping with environmental preconditions while satisfying societal needs.

45. This means developing a strategy towards non-undermining land/water management, paying attention to the complexity of water-related issues by successfully balancing the different functions, sectors and stakeholder groups internally. For the next generation of water resources management efforts, it is essential to realize that the water passing through a landscape with its settlements and artefacts is involved in a whole series of parallel functions (health, habitat, production, carrier and psychological). Such different functions are often linked to separate societal sectors driven by different political goals, have different groups of stakeholders, and are managed by different administrations.

46. Planning and decision-making in a river basin or a management unit must be placed in the framework of a system in which all components are related: to evaluate any one of the components in isolation is to omit the impact on the broader goals of a society or a nation. An integrated approach, which takes into account all relevant factors and involves all those who are active in such fields in order to get broad support and commitment, is indispensable.

1. Avoiding overexploitation of groundwater

47. The use of groundwater - often the only reliable resource in semi-arid regions - has to be adapted to the aquifer's sustainable yield in order to protect the land from subsidence and the economy from undermining and long-term decline. This is particularly important in coastal areas to ensure that groundwater does not become unusable due to irreversible intrusion of saline water into the aquifer.

2. Non-polluting land use

48. In water-scarce regions, it is particularly essential that passing water be carefully protected from quality deterioration from waste-producing land use, which makes the water hazardous for water-dependent activities in the region. In other words, land use has to be managed so as to avoid incautious waste-handling and other polluting activities that might expose the water to quality degradation. Protection of underground water resources from pollution, especially of an organic nature, is particularly important, because their isolation from the atmosphere effectively reduces the possibility of self-purification through aerobic mechanisms.

3. Land fertility to be safeguarded

49. In view of increasing global concerns for food security for the rapidly growing world population, it is essential to minimize land fertility

degradation, which undermines the potential for food self-reliance as a result of poor land policies or poor irrigation management.

4. Proper attention to cross connections

50. Due to land/water linkages, it can be stated that land-use decisions are actually water-use decisions as well. Proper management therefore demands that the two be integrated, at least in the sense that land-use management must have a water component and water management must have a land-use component. For example, in order to protect water from quality deterioration efforts must often be focused on land-based pollution sources. Ways should therefore be developed by which it will be possible to orchestrate 12/ the enhancement of life-support systems by careful control of the environmentally degrading landscape manipulations involved in harvesting natural resources (water, energy, food, fuelwood, minerals). Attention should be paid to the so-called tyranny of micro-decisions that result in local changes in the landscape, with consequences which, when added up and integrated, may produce unacceptable conditions and degradation of life-support systems.

5. Balancing between conflicting objectives

51. The way in which water is allocated among competing uses or classes of water users is the determining point of interest when adopting the demand approach to the development of a management framework. In order to come to a justifiable solution of the problem, it is essential to have a clear identification of the (conflicting) objectives at stake, as well as of the users to be served and their positive or negative contribution to meeting the needs of all objectives.

52. The evaluation and ranking of alternative solutions for the allocation problem, therefore, must be based on a number of objective criteria, including objective factors, such as impact on economic indicators, patterns and rates of growth of population, quality of life, coverage of service offered, reduction of new supply costs, and impacts on water quality.

6. Integrated approach

53. Serving human activities with water calls for an integrated approach at the level of river basin or drainage basin. Strategies must therefore make such an approach possible, integrating interrelated phenomena, such as upstream water-impacting activities and downstream water-dependent activities, as well as land use and water management. From a water allocation perspective, water in aquifers and rivers has to be shared on three complementary levels: (a) local sharing between water-dependent sectors and users (households, industries, irrigated agriculture); (b) urban/rural sharing; and (c) upstream/downstream sharing by sequential reuse. At tne same time, strategies should include deliberate methods of pollution avoidance to ensure sequential reuse of resources.

54. The integration between land and water should preferably also include waste management to protect water from being polluted. Key components are water resources development, supply systems, demand management, waste management restrictions and waste-water treatment. When translated into its implications in a societal context, such integration between land use, water management and waste management should also be reflected in the approach to human health, nutrition, employment and ecosystem health.

C. Human capability development

55. The management revolution must be supported by education, training, empowerment and responsibility sharing in order to develop the human capability needed to address the new challenges in terms of complexity and interactions, fill existing gaps in terms of deficiency of trained manpower, and produce new cadres of professionals that are better trained and empowered in addressing complexity. 13/ Education is essential, but only if educated professionals are given the power to implement the management measures decided upon. In addition, awareness-raising campaigns among both politicians and the general public are also called for: the public should be given the chance to understand the risks they are taking, and not merely left to do so.

IV. HOW IS IT TO BE DONE?

56. Implementation of the action needed and discussed in section 3 above is not a matter of merely giving an order to a group of civil servants and engineers. Training and capacity-building is necessary but not enough. An enabling environment should be created to initiate the necessary cooperation and preparedness of all sectors and actors involved in the process, even if for some of them there will be the threatening prospect that they may lose a monopoly. Institutional support at the political level will be a prerogative for a successful undertaking. A set of clear actions are suggested below for enabling such a process. Experts are well aware of technicalities but must be offered the right instructions, organization, structures for coordination, institutions and legislation to achieve an integrated approach.

57. National policies will evidently be greatly affected by climatic region and state of economical and social development. For example, the urban water-supply in South-East Asia is vastly different from the water-supply in Europe, although the same principles apply.

A. Defining constraints

58. Hydroclimatic and hydrographic constraints must be evaluated and taken into account in land-use planning. Without access to household water, inhabited areas have no future. Industrial areas also depend on water supply for water-dependent industrial processes. And in dry climate regions, successful agricultural yields are critically dependent on access to protective irrigation during drought periods. In water-scarce regions, the possibility of drought-proofing the crop production must however be coordinated with other uses of

passing water (municipal uses, industry, hydropower). The water passing through a particular river basin, in other words, must be shared between upstream and downstream users, as well as among societal sectors. Wherever water is scarce, water demands must be minimized and water productivity maximized.

B. Management tools

59. Management tools available for the implementation of the complex land/water/waste management necessary in order to avoid the current undermining of human life-support systems include:

(a) Legislation consistent with the laws of nature;

(b) Hierarchical administrative systems that allow an intersectoral approach and dialogue, and are capable of handling complexity without bureaucratic paralysis;

(c) Education at all levels of society.

60. The Government must:

(a) Develop the legislation and regulations that make regional planning possible;

(b) Define national objectives and targets to secure development within the constraints of prevailing environmental conditions and vulnerability;

(c) Secure the necessary legislation for waste minimization, together with enforcing rules and regulations.

61. Demand management measures are also evaluated in terms of public policy, user requirements and environmental requirements. In developing demand management policy, a water agency must choose among combinations of numerous legislative, regulatory, technological and behavioral measures, each with a unique set of advantages and disadvantages. Incentives and sanctions are important to support demand management.

C. River basin oriented action plan

62. Although much action must generally be taken at the local level, actions must also fit into an overall regional plan, manifesting a joint programme for a river basin or management unit. The river basin plan offers a clear opportunity for balancing different interests, and even for striving to achieve visions shared among key stakeholder groups. Emphasis should be directed to:

(a) The evolution of an integrated land/water-oriented action plan to achieve a balanced development of the river system, taking into account all relevant factors (demographic changes, ecological, socio-economic, hydrologic and hydraulic factors, and spatial and agronomic potentials of the basin) and

ensuring proper attention to urban/rural and upstream/downstream competition for water;

(b) Stimulating environmental awareness and institutional strengthening inside the subject ministries and non-governmental organizations concerned in order to obtain support for such an integrated water-oriented planning and to promote the effectiveness of the decision-making process.

63. An effective action plan should at least cover the following features:

(a) A clear set of objectives to be achieved and potentials to be developed in a well-defined period of time. If necessary, various phases can be indicated to make an acceptable and realistic progress towards possible goals;

(b) The physical, socio-economic, environmental and institutional systems influencing objectives;

(c) The disciplines involved in the formulation of the action required, its implementation and the monitoring of the progress towards objectives;

(d) An inventory of all relevant factors in the existing situation as starting and reference points;

(e) Clear indicators to monitor progress made;

(f) Clear description of actions and appointment of actors responsible for implementation.

64. Procedures are available for the systematic consideration of demand-management measures, and for their integration into demand management plans. When followed carefully, such measures can identify and discard plans that fail to achieve all objectives satisfactorily, or that achieve objectives at a unnecessarily high cost. The development of alternative plans allows consideration of trade-offs among objectives or among different allocations of impacts across geographical areas of user classes.

D. Financing modes and economic incentives

65. Two guiding principles were recommended by both the International Conference on Water and the Environment and Agenda 21:

(a) The polluter pays principle;

(b) The principle of water as an economic good.

The polluter pays principle basically refers to the allocation of water in aquifers and rivers. In the long run, it will have to be given an expanded connotation to include the water consumed in rain-fed biomass production as well, since such return flow to the atmosphere represents water that is not available for reuse.

66. Water use responds to economic incentives that can be implemented either by using a tariff structure or by providing incentives for sound and responsible behaviour. Tariff design procedures in domestic and industrial water supply distinguish between the economic incentives provided by prices and revenue collection. Proper choice of tariff elements permits designs that promote efficient and resource-conserving use of water and support a range of income redistribution goals while collecting the necessary revenues.

67. Incentives can be provided through a variety of methods. In the case of domestic demand rebates may be given to water users who commit themselves to voluntary quotas. In addition to the implementation of licensing systems, industrial users can be encouraged to contribute to water management goals by means of tax rebates on certain recycling and waste treatment equipment, high-use surcharges and penalties for discharging pollutants. The control of water use in irrigated agriculture can be addressed in various ways, such as levying penalties for water use in excess of water requirements projected for the next growing season, or by promoting the adoption of more efficient irrigation systems to replace the traditional techniques, for example, by making available low-interest loans contingent on the purchase and installation of improved irrigation equipment.

V. WHO SHOULD DO IT?

68. The implementation of the strategies described above will involve several groups of actors from the international level all the way down to the water user. Agenda 21 stresses the interaction between the formal and informal systems, including the private sector. Action at the governmental and intergovernmental levels, in particular, is addressed below.

A. Governments

1. Three main roles of government

69. Water resources are generally recognized as a major determining factor for the socio-economic development of a country. The close relation between water resources development and socio-economic development lies in the Government's role in creating an enabling environment for the desired national development process and making use of its natural resources in a sustainable way, i.e., without undermining the resource base. The Government has a number of roles, each justifying a different type of engagement:

(a) The Government as creator of an attractive environment for the natural development process, in which water is a major determining factor;

(b) The Government as responsible actor for environmental policy-making. The Government should develop strategies for non-undermining land/water/waste management;

(c) The Government as provider of services, such as certain water services, capacity-building, monitoring and conflict mitigation.

70. Agenda 21 recommends as a basic management principle taking action at the lowest appropriate level, in other words as close to the actual level of activity as possible. The Government must provide a hierarchical framework that makes such management possible. Governments should therefore set up mechanisms for basin-wide management in order to make an integrated approach possible on the river basin level.

2. International agreements

71. Especially in view of the non-negotiable hydrographic constraints defined by geographic facts (see fig. II), many countries are mutually dependent on the water resource of a shared river basin or aquifer. An international code of conduct for water-sharing was called for as early as 1977 in the Mar del Plata Action Plan. Today, almost 20 years later, an international code of water ethics is even more urgently needed to guide countries in their efforts towards bilateral and multilateral agreements on how to best benefit from the water passing through the river basin. With the need to intensify biomass production to feed a rapidly growing world population, we are approaching an even more delicate question: how to share the rain over the river basin with neighbouring countries?

B. United Nations

1. Main roles of the United Nations

72. Whereas Governments have the responsibility of facilitating water-related activities in their countries and safeguarding water resources in order not to undermine their development efforts, the United Nations is expected to facilitate Governments' actions by addressing cross-national problems and by maintaining a general and comprehensive overview for preventive purposes.

73. There are a number of other cross-country activities that the United Nations will be expected to take responsibility for, such as:

(a) Monitoring global water resources;

(b) Conflict mitigation, in particular third-party support of bilateral or multilateral negotiations over shared water resources;

(c) Securing research on survival issues, such as the intensification of rain-fed agriculture in dry climate regions with rapid population growth and therefore a rapidly growing life-support burden;

(d) Evaluation of development strategy formulation;

(e) Evaluating preconditions for sustainable development;

(f) Creating preparedness for the environmental migration, which is expected to escalate.

2. Address increasing regional imbalances

74. The United Nations should urgently take the initiatives needed to avert the imminent water crisis. An interesting model for the needed diagnosis worldwide could be the Intergovernmental Panel on Climate Change.

75. Issues of worldwide relevance include the implications of water scarcity for regional development, in view of the problematic environmental preconditions that such scarcity implies. Such linkages need to be seriously considered by the United Nations - the Special Initiative for Africa provides one opportunity. Unless a new agricultural revolution is envisaged in the near future that would radically reduce the amount of water consumed in food production in hot countries (currently about 3,000 cubic metres per ton of grain produced), it must be acknowledged as an urgent matter that there seems to be a definite limit to the human population that can be supported by the available water-supply.

76. The United Nations might even be motivated to analyse the situation of the Organization itself in relation to development strategies for third world development. A key issue is how to generate new positive spirals, such as the green revolution of recent decades, without undermining life-support systems or generating a continuous dependence of poor countries on continued international support and/or charity. Indeed, one way the United Nations could address the increasing imbalance between the supplying and the supplied regions of the world would be to convene a global conference on human survival on the threshold of the century.

3. Equitable share - of what?

77. The United Nations should also promote international understanding and cooperation on the integrated management and development of water resources, which might involve the formulation of an international convention on freshwater resources along the lines of existing conventions on biodiversity, ozone depletion, climate change and other fields of relevance for the future of humanity. In particular, the United Nations should develop principles and ethics to guide the world's nations in sharing the joint planetary freshwater resources, developing the global strategies needed to achieve socio-economic development in a way that does not undermine the life-support systems on which it depends, and safeguarding global food security. Safeguarding freshwater resources so that they remain available for the next generation as well makes the non-depletion of groundwater resources an intergenerational issue.

78. Probably the most crucial issue of all to be addressed by the United Nations is how the finite amount of freshwater circulated around the globe in the water cycle should be shared by humanity.

79. By applying the central environmental concept "Think globally, act locally" to the equitable sharing of freshwater, the joint resource to be shared by all countries on an equitable basis would be freshwater evaporated from the high seas, which would conform with current concepts of global sharing - even by land-locked countries - of the mineral resources of the high seas. 14/ Developing rules for such equitable sharing, however, would probably take even

more time than the quarter of a century needed for the efforts of the International Labour Organization to formulate rules for sharing the flow in international rivers.

80. Thus, a more realistic strategy in relation to freshwater would be "Think regionally, act locally", encouraging Governments to accept hydroclimatic and hydrographic constraints and to develop river basin action plans in which local activities and projects are seen as fundamental components.

4. Global water assessment initiated by the Commission on Sustainable Development

81. As follow-up to a decision made by the Commission on Sustainable Development in 1994, a United Nations-supported comprehensive global water resources assessment is currently being conducted jointly by the relevant United Nations bodies and the Stockholm Environment Institute. That initiative represents one of the necessary actions expected to trigger activities by Governments and help to bring about the changes needed in water policy. The General Assembly should be invited to prepare itself for rapid action in response to that assessment, which is to be submitted to the Assembly at its special session in 1997 to review the implementation of agreements made at the United Nations Conference on Environment and Development.

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UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/C.7/1996/7
29 March 1996

ORIGINAL: ENGLISH

COMMITTEE ON NATURAL RESOURCES
Third session
6-17 May 1996
Item 3 of the provisional agenda*

ACTIVITIES OF THE UNITED NATIONS SYSTEM IN THE FIELD OF WATER AND MINERAL RESOURCES, AND INTER-AGENCY COORDINATION FOCUSING ON PROGRESS MADE TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT

Technical cooperation activities of the United Nations system in mineral resources

Report of the Secretary-General

SUMMARY

The present report, on the activities of the United Nations system in the field of mineral resources, has been prepared in response to Economic and Social Council decision 1994/308. This report summarizes the changes made by the United Nations system in the field of mineral resources in response to Agenda 21 and describes the coordination and integration of activities of United Nations bodies and the specialized agencies and their activities in the area of mineral resources and the environment. The report also provides information on activities in other areas of mineral resources development including, inter alia, privatization, investment promotion, and small-scale and artisanal mining, as well as the addressing of new issues in mineral resources development.

The report also discusses the effects of the evolution in the funding of technical cooperation activities in mineral resources and of the current financial situation of the United Nations Secretariat.

* E/C.7/1996/1.

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CONTENTS

	Paragraphs	Page
INTRODUCTION	1 - 4	4
I. THE UNITED NATIONS SYSTEM AND MINERAL RESOURCES DEVELOPMENT	5 - 10	5
A. United Nations bodies participating in technical cooperation activities in the field of mineral resources	5 - 8	5
B. Organizational changes in the United Nations Secretariat pertaining to mineral resources	9 - 10	5
II. CHANGES MADE BY THE UNITED NATIONS SYSTEM IN THE FIELD OF MINERAL RESOURCES IN RESPONSE TO AGENDA 21 AND PROGRESS MADE TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT	11 - 36	6
A. Agenda 21 and mineral resources	11 - 15	6
B. Coordination and integration of activities of United Nations bodies and the specialized agencies	16 - 23	7
C. Activities in the area of mineral resources and the environment of the Economic Commission for Africa	24 - 25	9
D. Activities in the area of mineral resources and the environment of the Department for Development Support and Management Services of the United Nations Secretariat	26 - 36	9
III. ACTIVITIES IN OTHER AREAS OF MINERAL RESOURCES DEVELOPMENT	37 - 70	11
A. Mining legislation, investment promotion, privatization and other aspects of mineral resources development	37 - 55	11
1. Economic Commission for Africa	37 - 42	11
2. Economic Commission for Latin America and the Caribbean	43	13
3. Department for Development Support and Management Services	44 - 55	13

CONTENTS (continued)

	Paragraphs	Page
B. Progress made towards achieving sustainable development in the field of small-scale mining ...	56 - 70	15
1. Economic Commission for Latin America and the Caribbean	56	15
2. Economic Commission for Africa	57 - 59	15
3. Economic and Social Commission for Asia and the Pacific	60 - 62	16
4. United Nations Industrial Development Organization	63 - 65	17
5. Department for Development Support and Management Services	66 - 70	17
IV. CURRENT FINANCIAL ISSUES IN THE FUNDING OF UNITED NATIONS ACTIVITIES IN MINERAL RESOURCES DEVELOPMENT ..	71 - 77	18
A. Evolutions in the funding of technical cooperation activities	71 - 76	18
B. Advisory services and the effects of the current financial situation	77	20
V. CONCLUSION	78 - 80	20

INTRODUCTION

1. The Economic and Social Council, in its decision 1994/308, and upon the recommendation of the Committee on Natural Resources at its second session, held from 22 February to 4 March 1994 in New York, adopted the provisional agenda and documentation for the third session of the Committee, including the report of the Secretary-General on the technical cooperation activities of the United Nations system in the field of mineral resources, to be submitted to the Committee at its third session. 1/ The Committee had recommended that the report focus on the progress made towards achieving sustainable development, describing the coordination and integration of activities of United Nations bodies and specialized agencies, as well as on the changes made by the United Nations in response to Agenda 21 2/ and on the success of programmes in meeting the goals set.

2. The present report assesses the technical cooperation activities of the United Nations system in the field of mineral resources since the previous report of the Secretary-General (E/C.7/1994/3), entitled "Technical cooperation activities of the United Nations system in the mining sector", and submitted to the Committee on Natural Resources at its second session. The previous report, in describing the activities concerned, paid particular attention to projects aimed at enhancing the capacity of developing countries and countries with economies in transition to develop effective foreign investment policies and negotiate mining agreements and to develop and implement adequate social policies to respond to the ongoing trend towards privatization of the mining sector. That report also discussed the use of mineral resource exploration and development technology in the field of disaster prevention and mitigation.

3. The present report discusses the technical cooperation activities in mineral resources of the United Nations Secretariat. It includes general inputs from the Economic Commission for Latin America (ECLAC) and the Economic Commission for Africa (ECA) and inputs in the area of small-scale mining activities from the United Nations Industrial Development Organization (UNIDO) and the Economic and Social Commission for Asia and the Pacific (ESCAP). With the exception of its activities in small-scale mining discussed in this report, the activities of ESCAP under this agenda item are being presented to the Committee in a separate document (E/C.7/1996/12).

4. This report is structured as follows: section I provides a brief summary of the United Nations bodies that participate in activities in the field of mineral resources and of their respective activities and describes the organizational change in the United Nations Secretariat since the last session of the Committee; section II reports on changes made by the United Nations system in the field of mineral resources in response to Agenda 21 and progress made towards achieving sustainable development; section III describes activities in other areas of mineral resources development; section IV reports on current financial issues in the funding of United Nations activities in mineral resources development; and section V presents current issues in mineral resources development and the direction of the focus of future activities. Finally, the report offers conclusions and recommendations for the direction of future work for consideration by the Committee.

I. THE UNITED NATIONS SYSTEM AND MINERAL RESOURCES DEVELOPMENT

A. United Nations bodies participating in technical cooperation activities in the field of mineral resources

5. The present section provides a brief overview of the several organizations and agencies within the United Nations system that, in accordance with their mandates and areas of specialization, participate in technical cooperation activities in the field of mineral resources. 3/

6. Within the United Nations Secretariat, the Department for Development Support and Management Services is the principal United Nations office responsible for the implementation and coordination, in cooperation with other relevant bodies, of technical cooperation activities in the field of mineral resources development. Also involved in the execution and finance, through grants, of technical cooperation assistance in regional projects are the following regional commissions: ECA, ECLAC, ESCAP and the Economic and Social Commission for Western Asia (ESCWA). The United Nations Conference on Trade and Development (UNCTAD) is mainly concerned with mineral economics and trade in primary commodities, while its Programme on Transnational Corporations assists Governments in their relations with transnational corporations.

7. The United Nations programmes involved in technical cooperation activities in mineral resources, primarily in a financing capacity, are the United Nations Development Programme (UNDP), which finances technical cooperation activities in all aspects of mineral resource development; the United Nations Revolving Fund for Natural Resources Exploration (UNRFNRE), which was established to provide an additional source of exploration financing for countries not adequately covered by other sources, and the United Nations Environment Programme (UNEP), which finances mineral resource activities related to environmental protection.

8. Among the organizations of the United Nations system, the United Nations Educational, Scientific and Cultural Organization (UNESCO) provides assistance for formal academic training, the establishment of schools of geology, and certain research programmes. UNIDO assists in developing mineral-based industrial processing operations. The International Labour Organization (ILO) participates in technical cooperation relating to work conditions and worker safety in mineral resource extraction, encompassing all levels of mining. The International Atomic Energy Agency (IAEA) is involved in regulating, and giving limited assistance for, the exploration of nuclear raw materials. Finally, the World Bank and its affiliate, the International Finance Corporation, provide grants and soft loans for technical cooperation activities and project financing.

B. Organizational changes in the United Nations Secretariat pertaining to mineral resources

9. Further to the restructuring of the departments of economic and social development of the United Nations Secretariat in 1993, an additional organizational change in regard to mineral resources has taken place. As a result of the decentralization of activities and resources in the fields of

natural resources and energy as discussed in the report of the Secretary-General of this subject (see document A/C.5/48/76 of 31 May 1994), technical and professional posts were decentralized from the Department for Development Support and Management Services to the regional commissions in order to strengthen their ability to provide technical assistance and policy advice in the area of mineral resources at the regional level. The technical and professional posts remaining in the Department for Development Support and Management Services were to constitute the minimal critical mass needed to provide substantive support to overall planning and management activities in mineral resources in line with the mandate of the Department.

10. As a result of this decentralization, the coordination and integration of activities involving the Department for Development Support and Management Services and the regional commissions are to be carried out under a mechanism referred to as "joint programming". While activities have been scheduled for implementation under joint programming, most of them have had to be postponed or cancelled owing to the current financial situation in the United Nations Secretariat, described further under section IV below.

II. CHANGES MADE BY THE UNITED NATIONS SYSTEM IN THE FIELD OF MINERAL RESOURCES IN RESPONSE TO AGENDA 21 AND PROGRESS MADE TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT

A. Agenda 21 and mineral resources

11. As was noted by the Committee during its second session, Agenda 21 does not specifically address issues such as the sustainable supply of mineral resources nor does it provide a separate chapter on the environmentally sound management of mineral resources development. The subject of mineral resources is addressed in general terms under section II of Agenda 21, Conservation and management of resources for development. Chapter 10 of that section, entitled "Integrated approach to the planning and management of land-resources", discusses land in an integrative view encompassing natural resources, including minerals. It calls for "examining all uses of land in an integrated manner", thereby making it possible "to link social and economic development with environmental protection and enhancement ... thus helping to achieve the objectives of sustainable development" (para. 10.1).

12. Chapter 10 then presents the programme for an integrated approach to the planning and management of land resources. The broad objective of this programme is to "facilitate allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources". Specific objectives are "to review and develop policies to support the best possible use of land and the sustainable management of land resources ... to improve and strengthen planning, management and evaluation systems for land and land resources ... to strengthen institutions and coordinating mechanisms for land and land resources ... to create mechanisms to facilitate the active involvement and participation of all concerned, particularly communities and people at the local level, in decision-making on land use and management".

13. Agenda 21 also addresses general issues related to the production and consumption of mineral resources under its section I (Social and economic dimensions), chapter 4 (Changing consumption patterns). In particular, in discussing unsustainable patterns of production and consumption, chapter 4 states that "special attention should be paid to the demand for natural resources generated by unsustainable consumption and to the efficient use of those resources consistent with the goal of minimizing depletion and reducing pollution". Chapter 4 also calls for, inter alia, the encouraging of greater efficiency in the use of energy and resources, the minimizing of the generation of wastes and a moving towards environmentally sound pricing.

14. Therefore, while Agenda 21 does not provide a separate chapter addressing issues pertaining specifically to mineral resources, such as the operational aspects of mineral resources planning and management, it none the less sets the priorities under which mineral resource management and technical assistance are to be carried out. Further general guidance for these priorities is given by the Capacity 21 programme of Agenda 21. The goals of this programme are to (a) assist countries in incorporating the principles of sustainable development into their development plans and programmes, (b) assist countries in involving all stakeholders in developing planning and environmental management and (c) create a body of experience and expertise in sustainable development and capacity-building that will be of continued material value to, and influence the operation of, developing countries, UNDP, the specialized agencies, non-governmental organizations and other donors.

15. As a result, the United Nations bodies participating in technical cooperation activities in mineral resources have, system-wide, re-examined the way in which these activities are being carried out. They have reoriented their policies so as to place an increased emphasis and priority on environmental protection and on assisting developing countries and countries with economies in transition in developing their mineral resources in an environmentally sound manner using the latest knowledge and technology available, in actively including communities and other stakeholders in mineral resources development and in emphasizing capacity-building and training of those involved.

B. Coordination and integration of activities of United Nations bodies and the specialized agencies

16. In the spirit of Agenda 21, the United Nations system is adopting a cross-sectoral, multidisciplinary approach in coordinating and integrating its activities and in assisting developing countries in formulating and implementing their mineral resources and environmental and sustainable development policies.

17. UNEP and the Department for Development Support and Management Services of the United Nations Secretariat have collaborated in the preparation and publishing of a training manual entitled Environmental Management of Mines Sites 4/ which has been promoted at several mining conferences and meetings. The manual addresses environmental issues that are common to large and small mine sites in all countries, such as, inter alia, water pollution, mine wastes, hazardous residues from processing, tailings dams and site rehabilitation. It also covers the use of management tools such as environmental impact assessments

and environmental auditing. UNEP and the Department for Development Support and Management Services are also engaged in the process of preparing an environmental manual for mining operations.

18. The coordination and integration of United Nations activities have been particularly pronounced in the provision of upstream, multisectoral technical support services. Recent multi-agency missions have involved close collaboration not only between United Nations organizations and the national agencies in the country in question, but also between those organizations and the private sector and non-governmental organizations, thereby ensuring that policy advice is grounded in the knowledge and experience of nationals and increasing the level of national participation in the development process.

19. In Papua New Guinea, a joint United Nations mission entitled "Joint inter-agency policy consultations on sustainable development" was implemented by the Food and Agriculture Organization of the United Nations (FAO), UNIDO, UNESCO, and the Department for Development Support and Management Services of the United Nations Secretariat as team leader, and national consultants. The multidisciplinary mission team consisted of 10 members and included a development economist, a mineral resources expert, an industrial economist, an environmental lawyer, a sustainable agriculture analyst, a fisheries adviser, a natural resources adviser, an institutional adviser, an education adviser and a people's participation adviser.

20. Using the vision of sustainable human development contained in the Five Goals of the National Constitution as the framework for its work, the mission analysed the major environment and development issues facing Papua New Guinea under the three broad headings of enabling government, managing Papua New Guinea's resources and empowering people for effective participation and integral human development. This integrated package of policy advice on development and the environment assisted the Government's National Sustainable Development Strategy Steering Committee to formulate and implement the National Sustainable Development Strategy.

21. In Albania, a joint United Nations mission, implemented by UNIDO, ILO, and the Department for Development Support and Management Services of the United Nations Secretariat as lead agency, assessed the technical cooperation needs of the mineral resources sector. The mission team, which was made up of specialists in legislation and administration, mining and mining exploration, mining and the environment, labour and social issues and metallurgy, outlined specific recommendations to provide an aid programme of practical assistance to the ailing sector for consideration by relevant funding agencies.

22. In Togo, a joint United Nations mission under a project entitled "Struggle against poverty and for sustainable development" was implemented by FAO, UNIDO, the Department for Development Support and Management Services of the United Nations Secretariat, and ILO as lead agency. Significant attention was given to artisanal miners as micro-businessmen and to artisanal mining as a means to combat poverty and promote rural development. The mission prepared a diagnostic study on the current socio-economic and political atmosphere for rural and urban micro-enterprises and on the current support being given to this sector by assistance agencies; a set of recommendations for political, institutional and

legal strategies for assistance and an operational approach to coordinating and harmonizing assistance; and proposals for support programmes for access to credit and for the institutions supporting this sector.

23. A result of this diagnostic study mission was the formulation of a UNDP-financed multi-agency programme of multisectoral assistance to the Government of Togo to be implemented by FAO, UNIDO and the Department for Development Support and Management Services and national consultants under the leadership of UNDP. Included in the project is the promotion of artisanal mining for the benefit of the rural poor and the starting of a data bank on the mineral potential of Togo, including a feasibility study indicating the estimated value of each known ore reserve.

C. Activities in the area of mineral resources and the environment of the Economic Commission for Africa

24. ECA has increased its emphasis on the environmental issues related to mineral industry activities, and all of its studies and assistance to its member States and intergovernmental institutions now include an environmental component. With respect to the processing of wastes and tailings and the elimination of negative ecological consequences of the past activities of mineral enterprises, ECA is planning to undertake a review of the experience of South Africa which is performing well in this sector. Lessons learned from this experience will be put at the disposal of other African member States and mining operators.

25. ECA is also preparing a technical publication entitled "Problems related to sustainable development and utilization of natural resources and energy: strategies for intercountry cooperation in the context of Agenda 21". The study covers, inter alia, the mineral resources sector and was scheduled for completion by December 1995. In addition, a regional seminar on "Sustainable development of natural resources and energy, taking into account environmental concerns with Agenda 21" was programmed; however, owing to the current financial situation, this activity has not received funding.

D. Activities in the area of mineral resources and the environment of the Department for Development Support and Management Services of the United Nations Secretariat

26. An increased emphasis on the environment has also been undertaken in the Department for Development Support and Management Services of the United Nations Secretariat. Since the United Nations Conference on Environment and Development and the formation of the Department for Development Support and Management Services in 1993, the Department for Development Support and Management Services has been involved in the following activities in mining and the environment: analysis of the environmental impact of large- and small-scale mining, including environmental audits of mining operations; training of national staff in measures for environmental protection and awareness, including environmental monitoring; development of mining legislation incorporating mine safety and

environmental protection regulations; promoting of conservation and recycling of mineral resources to minimize discharges and to encourage environmentally sound disposal practices; reclamation of disturbed land and its restoration to safe and productive status; and enhancement of institutional and human resource capacity for environmental management in relation to minerals development.

27. In accordance with Agenda 21, the technical assistance missions of the Department for Development Support and Management Services ensure that development policies relating to minerals strike a balance between growth and development, and the environmental consequences of production. All technical cooperation projects have been re-evaluated to include environmental concerns. Recent technical projects in developing countries in the mining sector are helping specifically with respect to the undertaking of an environmental review of mining practices and policies. Technical assistance missions are assisting developing countries in redesigning their laws governing mineral resources development with key environmental provisions and mechanisms for implementing such laws.

28. Workshops have been organized in developing countries so that developing-country Governments may familiarize themselves with environmental management tools such as environmental impact assessments and environmental audits and the implementation of the Berlin Guidelines (E/C.7/1993/10, annex I) on mining and the environment. The Department is also developing ecological indicators for sustainable development for the Commission on Sustainable Development.

29. The technical missions of the Department for Development Support and Management Services underscore the importance of incorporating well-established environmental management mechanisms such as environmental plans, environmental impact assessment and environmental audits. Recent policies place an emphasis on a decentralized monitoring and implementation system in accordance with the principle of subsidiarity. Human resource capacity-building and emphasis on specialized environmental education are accorded priority.

30. There are several examples of the activities and technical missions in mining and the environment of the Department for Development Support and Management Services of the United Nations Secretariat.

31. At the request of the Government of Guyana, the Department for Development Support and Management Services and the Environmental Protection Agency of the United States of America jointly conducted an environmental audit of a cyanide spill that had occurred as the result of a massive dam failure of the tailings pond at a large gold-mine. The audit consisted of an independent technical assessment of the environmental impact of the spill, a review of the environmental monitoring framework for the gold-mine project and recommendations on future environmental monitoring arrangements.

32. During a second mission requested by the Government of Guyana and funded jointly by UNDP and the Inter-American Development Bank (IDB), the Department for Development Support and Management Services of the United Nations Secretariat reviewed the environmental impact statement that had been prepared for a newly constructed tailings pond. To improve future monitoring arrangements, the Department for Development Support and Management Services

proposed the outline for an environmental management plan to be developed in a joint effort by the Government, the University of Guyana, national environmental consultants and external advisers. UNDP has proposed to fund such an initiative and IDB has shown keen interest in tying in these efforts with an IDB-funded programme for the establishment of a Guyanese environmental protection agency.

33. In Viet Nam, UNCTAD sponsored, at the end of 1995, in cooperation with ESCAP and the Department for Development Support and Management Services, a workshop on environmental policy, regulations and guidelines for mining. 5/ The workshop addressed, inter alia, mining and the environment, environmental impact assessments, environmental management and regulatory systems, environmental regulations for mining, case-studies for Viet Nam and strategies for the implementation of incentive-based environmental regulatory mechanisms. The results of the workshop will assist the Vietnamese Government in developing their approach to formulating regulations in mining and the environment.

34. In Uganda, a study was completed for the Government that assessed the effects of mining on the environment and formulated an Environmental Management System for the mining industry. The study provided the responsible departments of the geologic survey in general, and the mineral production sector in particular, with mechanisms to monitor the activities of miners and ensure their compliance with established environmental guidelines.

35. In Cameroon, technical assistance was provided to a nationally executed project in environment management. The assistance included, inter alia, a diagnosis of the environmental impact of the mining sector, the identification of priority areas of action and the formulation of specific recommendations for inclusion in the national environmental strategy and management plan.

36. In Mozambique, technical support services were provided to the Government in assessing the environmental impacts of mining activities, evaluating the Government's draft environmental law, and assisting the Government in defining policies and guidelines aimed at the protection of the environment from mining ventures and in correcting environmental damages already incurred. The initial assistance was followed by an extensive review of the present environmental situation in the mining sector and the presentation of recommendations that would assist the Government in completing its reform of mining and environment law and policies.

III. ACTIVITIES IN OTHER AREAS OF MINERAL RESOURCES DEVELOPMENT

A. Mining legislation, investment promotion, privatization and other aspects of mineral resources development

1. Economic Commission for Africa

37. Over the past two years, the ECA has been carrying out studies on privatization in the African mining sector and related industries. In that context, it came across two of the issues set forth in the provisional agenda for the third session of the Committee on Natural Resources, as adopted by the

Economic and Social Council, in its decision 1994/308, at its resumed substantive session of 1994 (November). These two issues are (a) the complementarity between the roles and obligations of investors and involved parties of host countries considering the intrinsic value of mineral deposits and accrued benefits and (b) the socio-economic aspects of privatization of State-owned mineral assets.

38. The issues raised under item (a) in the above paragraph have been studied by ECA. In June 1995, a paper entitled "Some aspects of privatization in the African mining sector and related industries" was presented at a conference on mining in 1995 held in Windhoek, Namibia. Another paper was scheduled to be presented at the African Conference on Development and Utilization of Mineral and Energy Resources in Africa held in Accra, Ghana, from 13 to 23 November 1995. The conference was organized by ECA with the support of the Government of Ghana.

39. Through its studies, the ECA secretariat came to the conclusion that beginning in the 1970s and during the 1980s most African countries had been unsatisfied with their state-owned, -controlled and -operated mining companies which had failed to achieve their purposes or had done so at high cost. As a result, the African Governments had found it difficult to avoid privatization.

40. ECA has found that, concerning the socio-economic aspects of privatization of state-owned mineral assets (item (b) above), the implementation of the new policies in several African countries encountered difficulties owing to socio-economic concerns. On the one hand, the private sector is interested in projects with high commercial potential with prospects for good and rapid returns on the investment, whereas the host Government is primarily concerned with employing its mining revenue to develop the economy and use the range of its minerals for the improvement of the living standards of its people.

41. To minimize such conflicts, ECA does not advocate a total disengagement of the State from the mining sector. ECA calls for a cautious and case-by-case approach regarding the sales, total or partial, of shares of state-owned, -controlled and -operated companies. In such transactions, the difference between the social value of the enterprise under government operation and the social value of the same enterprise under private operation, and the "destination" of the income from privatization, should be the most important parameters that would lead to the Government's selling its companies to the private sector.

42. Also, during the last two years, ECA has formulated project documents to be implemented once resources are secured for the establishment of a data bank on African mineral resources to reinforce the existing information in the Pan-African Development Information System (PADIS). The data bank will be connected to the existing information centres within the United Nations system, such as those of UNCTAD, UNIDO, the World Bank and the other regional commissions.

2. Economic Commission for Latin America and the Caribbean

43. ECLAC has published a report on mining legislation in Latin America and the Caribbean entitled "El dominio y soberanía de los recursos mineros y los régimenes actuales de concesiones en los países de América Latina y el Caribe y sus tendencias" (The control of sovereignty of mineral resources and the current concessional regimes in the countries of Latin America and the Caribbean and their trends). ECLAC has also prepared a study entitled "Las reformas mineras y los desafíos de la globalización (Mineral reform and the challenges of globalization), which includes information on the privatization of mining in Peru, and another study entitled "El comercio intrarregional de productos minero-metalúrgicos de los países de la Asociación Latinoamericana de Integración" (Intraregional commerce in mineral and metallurgical products of the countries of the Latin American Integration Association). In addition, ECLAC is presently undertaking a study of the environmental impact of new technologies applied to copper mining and gold-mining.

3. Department for Development Support and Management Services

44. The Department for Development Support and Management Services - in addition to being involved in the technical cooperation and capacity-building activities in mining and the environment described in section II above; the activities in investment promotion, mining legislation and general mineral development presented directly below; and the activities in small-scale and artisanal mining addressed in subsection B of the present section - is pursuing activities that are evolving into more upstream areas of mineral resources planning and management.

45. One such area is the link between mineral resources development and social development in the context of the corporate-community relationship. At a recently held international mining conference, the Department for Development Support and Management Services presented a paper that focused on the corporate-community relationship between international mining companies and the communities in developing countries and economies in transition in which they carry out their operations. Addressed in the paper were such topics as the socio-economic effects of mineral resource development, changes in industry-community relations, sustainable development and society's expectations, and the relationship between mining and human rights, particularly in the case of indigenous peoples.

46. Similarly, social development assistance in the context of artisanal mining, particularly with respect to rural employment creation, poverty eradication, health and education, is also being pursued. In many areas where small-scale mining occurs, particularly "gold-rush" areas, much income can be generated from artisanal mining but without a comparable rise in the quality of life or levels of health and education of the miners and their families. It is also expected that pursuing social development technical assistance initiatives, in combination with technical assistance in mining, will increase the visibility of the problems associated with artisanal mining as well as make assistance in this area more palatable to donors.

47. Other issues being explored in the area of mineral resources in developing countries and economies in transition are capacity-building in the training of nationals to monitor the activities of mining companies, local entrepreneurship and the development of local businesses ancillary to mining, the necessary conditions for the development of domestic mining industries and partnerships between agencies providing technical cooperation assistance in mineral resource development and the private sector.

48. While pursuing these new issues and areas, over the past two years, the Department for Development Support and Management Services has continued to implement technical assistance activities in investment promotion, mining legislation and overall mineral sector development, particularly in Africa and Asia.

49. In Burkina Faso, the first international mining forum, PROMIN'95, was jointly organized by the Government and the Department for Development Support and Management Services as part of a mineral investment promotion technical assistance project financed by UNDP. This forum was subsequent to the enactment in 1993, with the project's assistance, of a new mining code which has already generated 70 exploration permits, excluding small-scale mining titles, producing an estimated $20 million in exploration expenditures by private investors.

50. In Viet Nam, a technical cooperation project was recently completed that assisted the Government in completing a new mining law, together with the implementation of regulations and a model mining agreement, and in establishing an administrative framework for the effective operation of the new legislation and the sustainable development of the mining sector. The result of this project is the provision of national and international mining investment opportunities that will be a major contribution to the economic growth and development of Viet Nam.

51. In Ethiopia, a helicopter-borne electromagnetic, magnetic and radiometric survey has recently been completed. The final data set represents state-of-the-art high resolution, accurately positioned geophysical data specifically tailored to the needs of the mineral exploration industry. The digital data set, which includes a complete set of electromagnetic, magnetic and spectrometric data as well as geologic and planimetric information in digital form, is a valuable tool in the search for new mineral deposits. It will also serve as a model for similar surveys in other prospective areas in the country and in the region.

52. The mineral investment promotion technical assistance project in Ethiopia has also been implemented. This project has promoted the country's mineral resources endowments and trained national professionals in small-scale mining. The promotion documents that were compiled and distributed and the investment promotion meetings that were conducted have now brought information about Ethiopia's mineral endowments into the international arena. As a result, several foreign and national investors have come forward and applied for mineral rights.

53. In the Lao People's Democratic Republic, a project entitled "Mineral sector development" is under way. The overall objective of this project is to

accelerate the development of the country's mineral potential in an environmentally sound manner and with the Government's role being focused on the promotion, regulation and monitoring of private sector investment. The project will strengthen the national capacities required for this development.

54. In India, assistance was given in the organization of an international round-table conference on foreign investment in exploration and mining in New Delhi, India, hosted by the Government of India and the United Nations. At the round-table conference, potential investors were invited to view and become familiarized with the new Indian mining legislation and evaluate India's mineral resource potential. In return, the Government received valuable information from potential mineral investors on their view of the regulations and on what was attractive to them.

55. Assistance for the organization of a round-table conference was also given to the Government of Pakistan. As a result of the conference, the Government accepted the participants' recommendations that it set up a national task force with broad-based membership on the mineral sector. The task force is expected to finalize a draft of mineral concession rules, a blueprint for national geologic data and a mineral fiscal regime. In addition, as a result of the conference, two memoranda of understanding were signed between the Government and a major mining company for further development of the Duddar lead-zinc mineral area.

B. Progress made towards achieving sustainable development in the field of small-scale mining

1. Economic Commission for Latin America and the Caribbean

56. ECLAC has prepared a report on the development of small-scale mining in Latin America and the Caribbean entitled "El desarrollo de la pequeña minería en América Latina y el Caribe" (The development of small-scale mining in Latin America and the Caribbean).

2. Economic Commission for Africa

57. ECA, with member African States, has made efforts to reduce the pressure of the main constraints - structural, technical, financial and environmental - on the development of small-scale mining. The ECA secretariat has recently assisted African member States such as Cameroon, Ethiopia, Gabon, Burkina Faso, Mali and the Niger. The assistance consisted of field missions for the assessment of the existing situation followed by advice on technical, organizational, legal and environmental aspects.

58. A document was finalized on small-scale gold-mining in the Liptako-Gourma region which comprises Burkina Faso, Mali and the Niger. ECA participated in the third seminar on small-/medium-scale mining organized by IDB and provided the seminar with guidelines for legislation related to small-scale mining.

59. The ECA secretariat also attended the Round-table on Artisanal and Small-scale Mining organized by the World Bank Multilateral Investment Guarantee Agency (MIGA) in Washington, D.C., in May 1995. In his contribution, the ECA delegate focused on measures to be taken for a greater implementation of various recommendations related to the improvement of artisanal mining in Africa. Some of the measures concerned support to the participation of mining technicians as operators, including financial support to Governments.

3. Economic and Social Commission for Asia and the Pacific

60. ESCAP has been successful in emphasizing the importance of mineral developments for the economies of the region, as well as the crucial role of mining and downstream mineral industries in achieving sustainable development. It has also emphasized the key role of artisanal mining for the development of new mineral resources, the replenishment of national reserves, and the creation of alternate sources of income and, in general, as a complement to the activities of rural populations. It has adopted the conclusions and recommendations of the seminar on "Guidelines for the development of small-/medium-scale mining" (Harare, 1993) as to what differentiates small industrial mining activities, performed in accordance with a country's legal and fiscal framework, from artisanal activities, conducted by individuals or groups of individuals operating with locally available means and tools in circumstances where the administration of Governments has little or no influence over the activities.

61. In consideration of the impact of these activities on the populations of the rural sector, projects are being proposed for direct assistance at the level of mineral districts. This assistance is to be technical, to ensure a more efficient recovery of available resources and an awareness of environmental impacts; financial, to provide the artisans with the proper tools and financial support; formational, to inform the people involved on the ways to improve the performance of their trade; and sanitary, to reach the people in need of proper care. Countries where there is much small-scale mining activity and to which assistance is being directed include, inter alia, India, the Philippines, Viet Nam, Nepal, Papua New Guinea, Myanmar, Cambodia and the Lao People's Democratic Republic.

62. Most member countries of ESCAP have initiated a modernization of their fiscal and legal environment in an effort to attract investments from the private sector. It will be ESCAP's endeavour to ensure that measures are taken to encourage artisans to improve and increase their production and become part of the driving force represented by the small-scale mining sector. In the future, ESCAP's objectives are to support structural changes and policy reforms leading to a strengthening of industry and institutional capabilities. Increasingly, sustainable development will be addressed from the perspective of local communities as well as from that of national economies.

4. United Nations Industrial Development Organization

63. The avoidance of mercury pollution caused by artisanal mining in development countries has been recognized by UNIDO as the subject of one of its high-impact programmes for 1996-1997. This programme has been selected from among others as being one that illustrates and substantiates the type of services that UNIDO will develop and implement in the future. It is also worth noting that this programme places a particular emphasis on women.

64. The programme, called "Introducing new technologies for abatement of global mercury pollution", has been developed at the request of numerous countries and responds to the global environmental threat caused by mercury pollution. The programme aims at promoting the more efficient processing methods that displace amalgamation as the method of choice of small-scale miners, a great number of whom are women, children and members of ethnic minorities. Although the problem is not new, the immediate need for international cooperation in tackling it was recognized only recently. The environmental aspect of the programme, together with the subject of appropriate technology either produced by the workers themselves or fabricated at low cost by modest facilities in developing countries, implies a clear thematic focus on the priority theme of "Environment and energy".

65. The programme - providing support to ministries, geologic survey services and provincial or district administrative offices and liaising with minority communities - includes elements of normative work, policy advice, institution-building and technical cooperation, the latter aiming at the replacement of outdated technology with environmentally friendly and appropriate technology. As such, the programme manifests a high degree of integration and underlines the distinctive capacity of UNIDO to put together multidivisional teams ready to provide a variety of types of interrelated expertise in mineral processing, manufacturing and environmental protection as well as in terms of the integration of women into industrial development.

5. Department for Development Support and Management Services

66. Since the United Nations interregional seminar on "Guidelines for the development of small-/medium-scale mining" (held in Harare, Zimbabwe, in February 1993, and sponsored by the Department for Development Support and Management Services and hosted by the Government of Zimbabwe) the Department for Development Support and Management Services has continued to pursue technical cooperation activities in small-scale and artisanal mining. In addition, the Department for Development Support and Management Services was represented at the International Round-table on Artisanal and Small-scale Mining held at the World Bank in May 1995 and the representative of the Department for Development Support and Management Services was the only non-World Bank representative to moderate one of the four workshop sessions.

67. Small-scale mining assistance over the past two years has been given to the Central African Republic, Ethiopia, Togo (as described in sect. II.B above) and Mozambique.

68. In the Central African Republic, upstream technical assistance was provided to the Government in relation to its sector of artisanal mining in gold and diamonds. The mineral resource potential of two particular zones, and the mining methods of the artisanal miners were evaluated; and recommendations for increasing the production and revenues from artisanal mining, as well as an evaluation for areas that would have the potential for larger-scale production, were provided.

69. In Ethiopia, a training course in small-scale mining was conducted within a mineral investment promotion project. The course trained a core nucleus of graduates in theoretical and practical small-scale mining techniques, with an emphasis on alluvial gold. The course took trainees through all the development stages of exploration and mining and included training in business and money management. The timing of the course coincided with many new developments in Ethiopian mining legislation and will be of assistance to the authorities within the rapidly emerging mining industry.

70. In Mozambique, a technical assistance project in small-scale mining was recently completed. The project provided direct support to the Government in the development of small-scale mining in the country's northern and central provinces. The further development of the small-scale mining sector created employment for semi-urban and rural communities and fostered the establishment of local industries.

IV. CURRENT FINANCIAL ISSUES IN THE FUNDING OF UNITED NATIONS ACTIVITIES IN MINERAL RESOURCES DEVELOPMENT

A. Evolutions in the funding of technical cooperation activities

71. Just prior to the restructuring of the United Nations Secretariat in the areas of economic and social development in 1993, UNDP, the principal funding agency for United Nations technical cooperation activities in mineral resources, revised the funding priorities and the funding mechanism by which United Nations agencies were supported in their technical cooperation activities. The Governing Council of UNDP, at its thirty-eighth session (1991), adopted comprehensive legislation, in keeping with General Assembly resolution 44/211 on the comprehensive triennial policy review of operational activities for development of the United Nations system, that put forth new initiatives relating to the national execution of technical cooperation activities, and the development of projects according to an integrated and prioritized national programme, and placed renewed emphasis on human development and capacity-building in development activities.

72. In the context of a given technical cooperation project, execution is defined as constituting the overall management of the project, along with the assumption of responsibility and accountability for the production of outputs, the achievement of project objectives and the provision of UNDP resources. Implementation is defined as the procurement and delivery of all project inputs and their conversion into programme or project outputs, with the implementing agents accountable to the executing agent for the quality and timeliness of the project outputs assigned to them for implementation.

73. The emphasis on national execution, that is, execution by national government authorities, is in keeping with the primary objective of the operational activities of the United Nations system, which is to promote the self-reliance of developing countries through multilateral cooperation 6/ by building up, inter alia, their productive capability and their indigenous resources and by increasing the availability of the managerial, technical, administrative and research capabilities required in the development process. 7/

74. At the same time that national execution was given an increased emphasis, two new funding mechanisms were created so as to make use of the technical expertise and experience of the United Nations organizations that had previously been engaged in project execution within the new project context. One such mechanism is technical support services at the programme level, which was established to contribute, inter alia, to the achievement of a sharper technical focus by the five United Nations bodies for which this mechanism is available (the Department for Development Support and Management Services, FAO, ILO, UNESCO and UNIDO) and to the enhancement of agency technical support to developing countries in the upstream stages of programmes and project cycles, including sectoral policy advice to Governments and the formulation of subsectoral and cross-sectoral strategies and programmes. The other mechanism, technical support services at the project level, exists to ensure that the highest technical quality is maintained in UNDP-financed projects that are nationally executed by providing technical support, that is, technical monitoring and back-stopping, during project implementation.

75. Apart from the increased emphasis on national execution, UNDP has, during the past few years, been faced with decreasing contributions from donor countries. This decrease in voluntary contributions has not been fully compensated by bilateral government trust funds which often have more focused objectives. In order to make the most of the decreasing available funds, UNDP has reoriented its priorities so as to utilize the funds in those areas of sustainable development where it considers that it can have the highest impact. These priorities are eradication of poverty, environmental protection, employment creation and the empowerment of women. One result of these changes is that there are significantly fewer funds being used for new technical cooperation initiatives in the field of mineral resources. This phenomenon has also meant a decrease in overhead project revenues, which are used primarily to support technical staff, to the organizations involved in implementing technical cooperation activities in mineral resources.

76. The combined result of the effects described here and in section I above - decentralization of technical and professional posts to the regional commissions, decreases in donor funding of technical cooperation activities, reduced funding for technical cooperation activities in mineral resources with the resultant decreased overhead revenues from technical cooperation activities - has been a drastic reduction in the size and number of technical cooperation activities implemented in mineral resources as well as a drastic reduction in technical capacity in mineral resources in the Department for Development Support and Management Services and other bodies. As a consequence, many requests from the Governments of Member States for technical cooperation assistance in mineral resources are not being met.

B. Advisory services and the effects of the current financial situation

77. Just as the evolutions in the funding of technical cooperation activities in mineral resources have led to reductions in these activities, the current budgetary reductions and the financial situation in the United Nations Secretariat have meant a curtailing of normative activities in the field of mineral resources and have also led to a reduction in support staff. Significantly fewer funds are available to conduct mineral resource workshops and seminars or to fulfil Government requests for ad hoc technical advice. 8/ Activities to be carried out jointly between the Department for Development Support and Management Services and the regional commissions so as to increase cooperation and the integration of activities (referred to as joint programming) have also been curtailed owing to the lack of funds.

V. CONCLUSION

78. Since the United Nations Conference on Environment and Development in 1992 and its adoption of Agenda 21, the United Nations system has increased its emphasis on the formulation and implementation of environmentally sound mineral development policies and adopted a cross-sectoral, multidisciplinary approach in coordinating and integrating technical cooperation activities in mineral resources development, particularly upstream technical support services.

79. While the United Nations system continues to provide technical cooperation assistance and advisory services of a neutral and non-commercial nature in the field of mineral resources at the request of Member States, its ability to do so has been severely diminished owing to evolutions in the funding of technical cooperation activities, and current budgetary reductions and the financial situation in the United Nations Secretariat.

80. At the same time, in addition to areas of mineral resources development such as investment promotion and mining legislation, there are new areas and issues in mineral resources development that are opening up and being pursued with the limited resources available. Issues such as mining and the community, and mineral resources and social development, as well as small-scale mining and the increased attention being drawn to artisanal mining, provide areas in which to refocus on cross-sectoral, multidisciplinary activities and alternative approaches to mineral resources development. The Committee may wish to consider these new approaches and perhaps recommend additional paths to pursue as regards the environmentally sound development of mineral resources for the purposes of implementing activities in the area of mineral resources, given the current budgetary constraints under which United Nations organizations are operating and pursuant to their specific mandates.

Notes

1/ See Official Records of the Economic and Social Council, 1994, Supplement No. 6 and corrigendum (E/1994/26 and Corr.1), chap. I, sect. A, draft decision.

2/ Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II.

3/ A more detailed overview is provided in the report of the Secretary-General (E/C.7/1994/3) entitled "Technical cooperation activities of the United Nations system in the mining sector", submitted to the Committee at its second session.

4/ Industry and Environment Technical Report, No. 30 (1994).

5/ The Department for Development Support and Management Services and ESCAP had been programmed to be the original sponsors for the workshop, under a joint programming agreement. However, because of the financial crisis and the cutting of funds in the United Nations Secretariat, ESCAP was forced to withdraw. Fortunately, UNCTAD was able to take its place as a sponsor.

6/ General Assembly resolution 43/199, 2nd preambular paragraph, as given in "Guidelines for 1. Determination of execution and implementation arrangements; 2. Successor arrangements for agency support costs", revision 1 (UNDP, October 1992).

7/ Paragraph e (i) of the annex to General Assembly resolution 3405 (XXX), as given in "Guidelines for 1. Determination of execution and implementation arrangements; 2. Successor arrangements for agency support costs", revision 1 (UNDP, October 1992).

8/ The Committee on Natural Resources is also aware of some of the effects of the current financial difficulties, as reporting is now occurring under strict limitations regarding length. Also, owing to the reductions in substantive staff in the Department for Development Support and Management Services, which provides substantive servicing of the Committee, some reports, such as oral reports of the Secretary-General, could not be completed for presentation to the Committee.